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Inflammatory Conditions.

BY

J. M. ELDER, M. D.,

Surgeon to the Montreal General Hospital, Assistant Professor of Surgery,
McGill University.



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A CASE OF SARCOMA OF THE SMALL INTESTINE, WITH A
NOTE ON THE SIGNIFICANCE OF "REBOUND PAIN" IN
CERTAIN ABDOMINAL INFLAMMATORY CONDITIONS.

By J. M. ELDER, M. D.

Surgeon to the Montreal General Hospital, Assistant Professor of Surgery, McGill University.

Case Report. H. N., Aet. 30, admitted about noon, July 30th, 1903
Complaints. Pains in the stomach.

Present Illness. Two days before admission, patient felt a slight pain in his abdomen associated with general malaise, but remained at work and took his meals as usual. His bowels moved and he noticed some tenesmus and slight nausea after stool, but no vomiting.

The following day he was obliged to stop work and took to bed. The pain had increased but there was no vomiting. Had another stool, which was quite painful.

On the morning of the day of admission he had very acute pain at stool, and also on trying to pass urine. He felt somewhat feverish and called in a physician who sent him to the Montreal General Hospital, where he came under my care in Ward "L."

Examination on Admission. Patient is a young man, fairly well nourished. Face somewhat pale, expression anxious, mucous membranes show moderate anaemia. Tongue lightly coated with whitish fur. Complains of pain across the lower part of his abdomen. T. 102°, P. 92, R. 24.

Abdomen rather full, symmetrical, not moving much with respiration.

On palpation there is acute tenderness and resistance over the whole of the lower zone, more marked on the right side. In the upper zone there is not much tenderness or muscular resistance.

The "rebound pain" sign was very well marked. (See note.)

There was evidence of some distension of the bladder, giving dulness for about one inch above the symphysis pubis.

Rectal Examination showed an acutely tender mass, high up on the right side of the pelvis.

Urine was drawn off and supra-pubic dulness disappeared. No mass was palpable through the abdominal wall, even under ether anaesthesia. Urinary examination gave negative findings.

Past History. Patient stated that he had suffered from recurrent attacks of abdominal pain for ten years, severe enough to keep him away from work for a few days each time.

He never had any severe vomiting or, as far as he knows, much fever with these attacks; but a physician, who saw him during such an attack four years ago, regarded it as appendicitis, and advised him to have his appendix removed, which he declined.

He was in average health up to December, 1902, when he had quite a severe haemorrhage from the bowel, severe enough to cause faintness and sweating. The bleeding was preceded by a slight amount of rectal tenesmus, but no pain or vomiting, though he felt nauseated. Within a space of three or four days he passed fresh blood five times at stool. The bleeding then stopped and he went to Bermuda to recover. He improved rapidly and on his return weighed 130 lbs.

He had only been at work about two weeks when, on April 29th, 1903, he had another severe haemorrhage, which he attributed to a strain while at work. He bled four times at this period, the blood was generally, but not always, mixed with faeces. At this period there was no severe abdominal pain, but sometimes he felt a dull ache across his abdomen, passing at times to the perinaeum.

On May 2nd, 1903, he was admitted to the medical wards of the Montreal General Hospital, and the following is from the case report written at that time:—

Past History. As above.

Family History. One brother died of tuberculosis.

Status Praesens. Patient somewhat emaciated and rather pale, weight 109 $\frac{3}{4}$ lbs. Appetite lost, mucous membranes pale. Dyspnoea and palpitation on exertion since December, 1902. No cough or expectoration. Bowels—regular. Some slight burning pain on passing urine.

Examination of Abdomen, negative, except for slight tenderness over the pubes which passed off in a day or so.

Rectal Examination, negative, no haemorrhoids. Had one or two tarry stools after admission, but later no blood could be found in faeces, even by microscopical examination. No tubercle bacilli in faeces, and no evidence of pulmonary tuberculosis.

Test Meal, negative, and nothing could be made out by inflation of the stomach.

Blood Examination, gave no typhoid reaction. Red cells, 2,935,000; white cells, 8,300. Haemoglobin, 45%.

Urine, normal.

For the first two weeks in the hospital at this time the patient had slight evening rises of temperature, the highest reached being 100 $\frac{2}{5}$ °, but generally about 99 $\frac{3}{5}$ ° reaching normal in the morning.

Under rest and iron the condition improved rapidly, weight increasing from 109 $\frac{3}{4}$ lbs. to 123 $\frac{1}{2}$ lbs. during the five or six weeks stay in the hospital.

No recurrence of the hæmorrhages.

No diagnosis as to the cause of the hæmorrhages could be arrived at, examination showing nothing more than the anaemia of moderate grade which had the characters of a secondary anaemia.

After leaving the hospital the patient remained fairly well for five or six weeks, and had been at his usual occupation for three weeks when the present attack set in.

Operation. With a probable diagnosis of acute non-perforative appendicitis, operation was undertaken on the afternoon of the day of admission, when the following conditions were found :

On opening the peritoneum free fluid was found present. The fluid was clear and gave no growth on serum. The peritoneum showed no signs of inflammation.

The appendix was found in its normal position, and not in the pelvis, as we expected. It was not diseased except a partial constriction and adhesions as evidence of former attacks. It was removed by simple ligature and cauterization of the stump.

On exploring the pelvis, a cystic tumour was discovered about the size and shape of a small orange. It was adherent to a coil of small bowel, which it seemed to have dragged down into the pelvis with it, and was also firmly adherent to the floor of the pelvic fascia. This adhesion to the pelvic fascia was clamped and cut, and the tumour delivered with the attached coil of small bowel.

It was then found that the tumour sprang from the ileum, about five inches from the ileo-caecal valve. The tumour was sessile, with rather a small base. Large vessels ran from the bowel wall into the tumour.

The tumour was removed by an oval lateral incision in the wall of the bowel at the site of the growth, and suturing the resulting wound in the bowel wall without complete resection.

The pelvic adhesions were tied off and the abdomen closed without drainage. No enlarged glands in the mesentery or elsewhere, could be discovered at the time of operation. So far as could be determined, the other organs appeared to be healthy.

The Pathologist's report on the tumour, furnished by Mr. W. G. Ricker, was as follows :—

“Specimen consists of a single globular mass, weighing 98 grammes and measuring 6.5 x 5.2 x 5.0 C.M.

The surface is smooth and glistening except for an area of 2.5 x 5.0 C.M., where it is adherent to intestine, a portion of which has been removed in area 3. x 6. C.M., and for a small area of adhesion which has been broken down.

Near the centre of the former portion are two openings .5 C.M. in diam., through which a probe may be passed for several C.M. [These openings before operation had connected the interior of the tumour with the lumen of the gut.]

The smooth surface shows several large blood vessels arising from the intestine. The tumor shows five distinct nodular elevations with a base of 1.5 C. M. and height of about .5 C. M. The color of the surface is dark bluish with several gray areas. On palpation the tumor consists of firm masses of tissue corresponding to the gray areas while other portions are soft and give distinct fluctuation.

On section the tumor shows a grayish substance more or less mottled in places by brownish areas. This substance is glistening on the cut surface, has an indistinct appearance of lobulation, is firm and on strong pressure exudes a quite clear fluid resembling serum. In places this is stained with blood. The greater portion of the tumor is cystic, spaces being found which measure 2 C. M. in diameter, and others of smaller size. These cysts contain red blood clot. The walls of the cystic portions are ragged and necrotic and surrounding tissue has a brownish tinge and is quite friable. Many of these cysts communicate with each other and with the two openings in the portion of intestine described above.

Mic. Exam. Sections were cut through the edge of the tumor next the intestine. The mucosa is that of the small intestine and appears normal. The basement membrane is intact and nowhere do the glands appear distorted. The submucosa is of normal thickness and appearance. The layers of the muscularis are seen to be separated in the form of the letter Y. Between the branches is a small mass composed of spindle shaped cells bound together by a very delicate reticulum. In this region individual muscle fibers are seen separated by columns of these spindle cells. External to the muscularis the tissue is composed of a mass of these spindle cells, while here and there the tissue has somewhat of a fibrous appearance.

Other portions corresponding to the firm, gray areas show solid masses of spindle cells. The diameter of these cells is approximately 15-20 M. M., and the length several times as great.

Pathological Diagnosis: Spindle-celled Sarcoma. Probably arising from the intermuscular connective tissue."

The convalescence was rapid and uninterrupted, patient leaving the hospital on the 23rd day after operation and being able to walk with slight assistance. Weight on leaving the hospital on Aug. 23rd was 112 lbs. Patient reported Oct. 24th, 1903. Has felt quite well since leaving the hospital. Weight has steadily increased up to 120 lbs. at present. Appetite good, and bowels move regularly every day without any laxative. He was about to return to his work in a few days.

In connection with this case report, we wish to refer to a report of five cases of sarcoma of the small intestine and a very full discussion of the subject by Dr. E. Libman, of Mount Sinai Hospital, New York, which appeared in the *American Journal of Medical Sciences* for Sept. 1900—p. 309.

He states that in three of these cases, the clinical picture closely resembled appendicitis, a resemblance not previously noted by any writer.

In the present case the symptoms and physical examination were both strongly suggestive of acute appendicitis, and this evidence, combined with a definite history of former attacks, seemed fairly conclusive. In addition to this the abdominal condition was hourly becoming worse.

In Libman's first two cases, although a history of an acute illness was given, and one case had been sent to the hospital as appendicitis, a careful physical examination revealed a large abdominal mass, not especially tender, with signs of free fluid in the peritoneum, so that a probable diagnosis of new growth was made before operation.

In the third case, the patient was a young man, eighteen years of age, who gave a history of only one day's illness.

On the day before admission he was seized with very severe pain in the right lower quadrant of the abdomen associated with vomiting. His bowels had moved on the day of onset. On examination he showed evidence of general peritonitis, and by rectum a doughy mass was felt high up. There was no history of previous attacks, but it was thought that the peritonitis was probably due to a perforative appendicitis. At operation the jejunum was found perforated from the infiltration of its walls with sarcoma. (Cf. Dr. Molson's case *infra*.)

This case forms an interesting comparison with ours, where the breaking down area was in communication with the bowel only, and no doubt was the source of the severe hemorrhages for which he was under treatment in the medical wards and outside the hospital.

In the fourth case, the patient gave a history of irregular abdominal pain for two weeks, followed by severe pain, especially in the pelvis, for

four days. There had been frequent urination for one week, no fever, chills or vomiting. Examination showed an emaciated patient T. 101°. A tender mass made out in the lower abdomen more to the right side, and a symmetrical bulging could be felt by rectum.

At operation, a hemorrhagic, cystic tumour was found springing from the ileum, and firmly adherent to the floor of the pelvis.

A beginning diverticulum was present at the point where the growth sprang from the bowel. The growth was removed with resection of two inches of intestine, but the patient died three days later from peritonitis.

Microscopically the tumour was found to be a spindle-celled sarcoma, and at autopsy no metastases were found.

This case tallied pretty closely with the one we have just reported. In our case, however, no mass was palpable through the abdominal wall but the whole of the lower abdomen was tender, especially on the right side. The mass felt by rectum, in our case, was acutely tender. The findings at operation were very similar, except that here the tumour was somewhat larger and farther from the valve than was the case in our patient.

A few of the concluding notes from Dr. Libman's article may be of interest to those who have not an opportunity of reading the article in full. As illustrating the *rarity* of the condition, he states that in sixteen years no case of intestinal sarcoma was observed in the Berlin Pathological Institute, with its wealth of post mortem material.

Thirteen cases were seen at Prague in fifteen years out of a total of 13,036 autopsies. Twelve cases in twelve years at Vienna. When it does occur intestinal sarcoma is generally in the small intestine or rectum.

It has been observed in all ages, but most often between the ages of 20 and 40.

It is seen twice as often in males as females.

Flexner has described bodies seen in the sections of the growths, which he believes to be protozoa, and has hinted at an infectious origin of the growths.

A characteristic feature of intestinal sarcomata is the absence of any tendency to stenosis of the bowel by their growth. This is explained on the ground that sarcoma infiltrates the muscular coat of the bowel, producing a local paralysis which tends to dilatation, rather than stenosis, at the site of growth.

When obstruction does occur, it is from mechanical interference, such as invagination, twisting of the mesentery, or from adhesions.

This is in contrast to carcinomata which tend to produce obstruction by stenosis of the gut.

The tendency of the growths to get into the pelvis, and form adhesions there, has been often noted, and was well illustrated by our case. It is probably at first due to gravity and subsequent adhesions due to degenerative inflammations in the tumour itself.

Symptoms may arise from pressure of the tumour on important structures, such as the vena cava, the bile or pancreatic ducts, or the ureters. Breaking down in the tumour may lead to perforation with peritonitis, or to hemorrhage, either into the peritoneum or into the bowels, as in this case.

This latter symptom does not seem to have been noted, or at any rate to have attracted much attention in the cases reported, though it gave such a definite preliminary history in this case.

As regards metastases, these are rare, or none, in spindle-celled sarcomata, frequent and extensive in lymphosarcomata.

They seem to be, however, rather extensions of the growth by continuity than true metastases.

As regards prognosis, unless operation is done fairly early, it is almost invariably fatal, the usual course of the disease being less than nine months in duration. The explanation of the sudden onset of acute symptoms, after a long latent existence of the disease, is supposed to be due to hemorrhages occurring in the growth, or to some mechanical factor, such as twisting of the mesentery or of the bowel to which it is attached.

In the latter case, the "peritonism" is analogous to that produced by volvulus or by the twisting of the pedicle of an ovarian cyst.

In the Hospital report of the Montreal General Hospital for 1882, we find a case of Sarcoma of the small bowel reported under the care of Dr. Molson (*Can. Med. & Sur. Journal* Vol. 10, p. 601). The patient was very weak, and had marked ascites and general anasarca. He lived only four days after admission. At the autopsy, Dr. Osler found a very large tumour, involving about 18 inches of the jejunum, the walls of the gut being 6 to 8 inches thick in places. The lumen was expanded. There were metastases in the kidney. It was a large round-celled sarcoma and the history of the disease extended over six months only.

NOTE. The sign which made me urge early operation in this case was the presence of "rebound pain."

This sign, although an old one, does not seem to get the routine use in practice, or the place in current text books that I think it deserves. I may therefore say a few words as to its use and significance.

In examining the abdomen of a patient suffering from acute abdominal symptoms, palpation often determines, better than anything else, the acuteness of the process and the urgency of the case.

In such a case one is often able to press quite deeply into the abdomen without causing much pain. This must be done gently at first and the pressure gradually increased, and is done most easily in the quadrants not the immediate site of the disease; and these should be first examined, to accustom the patient to the process.

If this is done, and the pressure suddenly relieved by quickly removing the hand, the abdominal wall will rebound, and the amount of pain produced is the measure of the degree to which the sign is present.

The explanation of the pain and of its significance seems to be as follows:—

It is taken as indicating the presence of tension in an inflamed viscus, those most often concerned being the appendix and Fallopian tubes.

By pressure on the abdomen the contents are crowded laterally, and the intra-abdominal pressure around the inflamed viscus raised. When done gradually, this may cause relatively little pain. When the hand is quickly withdrawn, however, there is a sudden lessening of pressure outside the viscus (appendix or tube) and, if the fluid within be under tension, there is a definite shock to the wall as the pressure change is compensated.

This causes sharp, sudden pain, which is intensified by its unexpected character, and the patient generally gives an involuntary start or cry, at times almost bounding from the bed.

It is, perhaps, a sign most valuable in appendicitis, where the question of when to operate and when to wait is so important.

If it be present, there is tension and danger of perforation, but perforation has not yet occurred.

This warning is especially valuable in cases of the gangrenous type, where the constitutional disturbance may be comparatively slight, but the rapidity with which perforation may occur is unusually great. On the other hand, it is absent where perforation has already taken place and tension has been thus relieved.

In such cases there is generally a history suggesting perforation and the absence of this sign is useful only as confirmatory evidence. A marked instance of its value occurred in a case under my care during the past summer.

Patient was a young man who had been ill for one day only. He gave no history of former attacks. Temperature and pulse normal.

Abdomen acutely tender in the right lower quadrant and rebound pain well marked. Immediate operation was advised, and at operation, a few hours after admission, a distended gangrenous appendix was removed, which would surely have shortly perforated. There were no limiting adhesions.

In three cases seen about the same period, perforation was diagnosed and found at operation, the sign being absent in each case.

It is also very useful in another class of cases, in which it is often very difficult to determine the presence or degree of actual disease, owing to the patient being neurotic or malingering.

Instances are not wanting where too much or too little dependence has been placed on the nervous element in explaining the symptoms in such cases.

From the unexpected way in which the pain is produced it is found to be absent in those cases where a neurosis is the main factor or where the patient is malingering.

If it occurs in a neurotic subject however, it is pretty definite evidence of actual disease and the treatment must be regulated accordingly.

The explanation of the presence of the sign in this case of sarcoma is probably to be found in the fact that there was a hollow, hæmorrhagic tumour directly connected with an inflamed viscus—the inflammation being sufficient to produce a condition of general “peritonism,” to use Treves’ term.

For valuable assistance in the preparation of this article, I am much indebted to my then House-Surgeon, Dr. E. Hamilton White, now of Montreal, for accurate notes kept at the time, as well as for a condensed history of the medical case report; and also to the then acting-Pathologist, Mr. W. G. Ricker, of the Johns Hopkins Medical School, for a very careful examination of, and report upon, the specimen, as well as for a review of the pathological literature of the subject.
